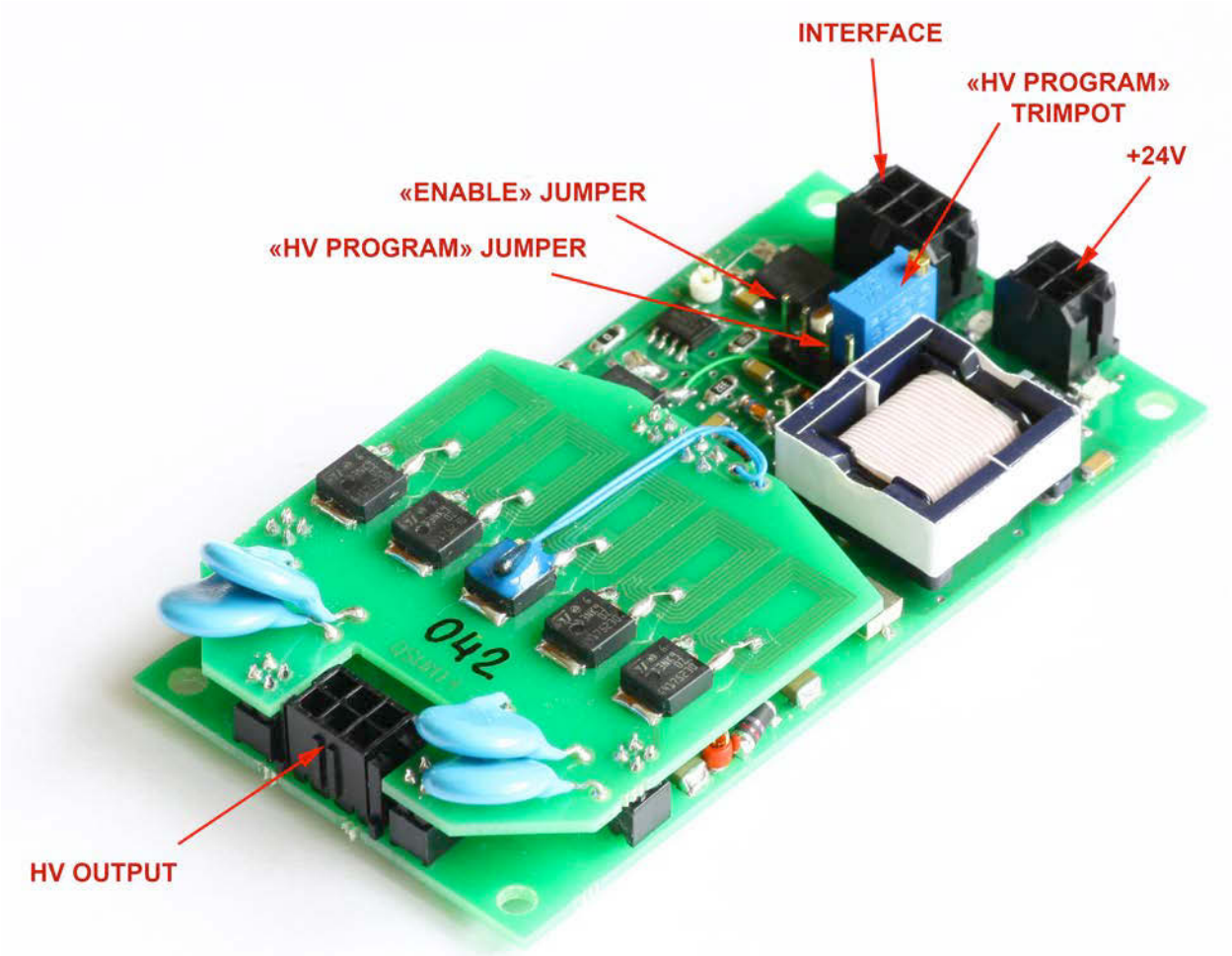
QBD-mini Pockels cell drivers

User manual

Warning! This equipment produces high voltages that can be very dangerous. Please do not be careless around the equipment!

Warning! The output of this Pockels cell driver is bipolar (symmetrical). Usage of non-symmetrical load or non-symmetrical probe can damage the driver. Only differential probes should be used.

Appearance, board layout



There are three Molex microfit connectors, two jumpers and one trimmer potentiometor on Pockels cell driver board. The description is below.

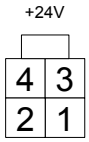
"ENABLE" JUMPER:

"ENABLE" JUMPER can be used instead of "ENABLE" signal (PIN4 of INTERFACE). Do not use "ENABLE" JUMPER and "ENABLE" signal at the same time.

"HV PROGRAM" JUMPER AND "HV PROGRAM" TRIMPOD:

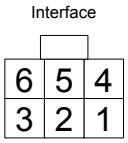
Use "HV PROGRAM" JUMPER instead of "HV PROGRAM" signal (PIN6 of INTERFACE). If jumper is on it sets output voltage accordingly to "HV PROGRAM" TRIMPOT state. Do not use "HV PROGRAM" JUMPER and "HV PROGRAM" signal at the same time.

+24V (Molex microfit 2x2):



PIN (color)	DESIGNATION	DESCRIPTION
1, 2 (red)	**+24V**	INPUT positive (+24VDC to turn on the Pockels cell driver)
3, 4 (black)	**RETURN**	Return from power supply producing +24VDC

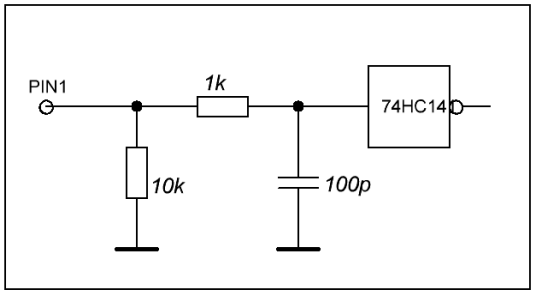
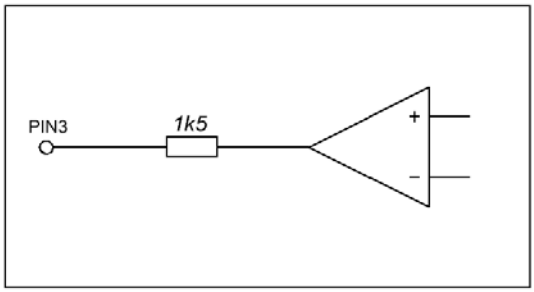
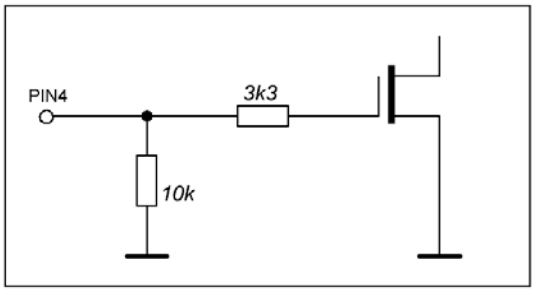
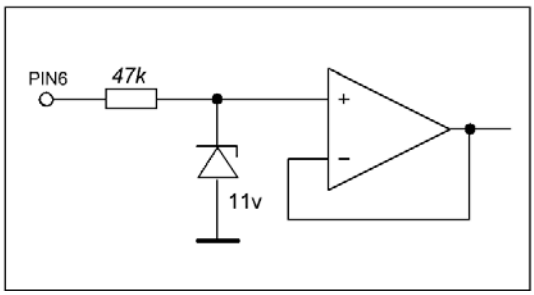
INTERFACE (Molex microfit 2x3):



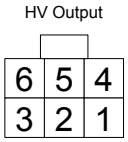
PIN (color)	DESIGNATION	DESCRIPTION
1 (orange)	**Q-switch**	Step from "0" or "1" on PIN1 forms Q-Switched pulse on Pockels Cell
2, 5 (black)	**Interface Return**	PIN2 and PIN5 are connected to the circuit ground of all internal circuits
3 (yellow)	**HV Monitor**	The voltage at PIN3 is a monitor signal proportional to the measured value of high voltage output **HVmax** corresponds to 10V at PIN3, **HVmin** corresponds to approx. 4V at PIN3
4 (blue)	**Enable**	The high voltage output is enabled by PIN4 ("1" – enable, "0" – disable)
6 (green)	**HV Program**	Positive DC voltage applied to PIN6 sets up high voltage value **HV** **HVmax** corresponds to 10V at PIN6, **HVmin** corresponds to approx. 4V at PIN6

"0" means logical 0 low level (0V), "1" means logical 1 high level (5V)

INTERFACE CIRCUITS

Q-Switch	
HV Monitor	
Enable	
HV Program	

HV OUTPUT (Molex microfit 2x3):



QBD-mini, UP-modification			QBD-mini, DN-modification		
PIN (color)	**DESIGNATION**	**DESCRIPTION**	**PIN (color)**	**DESIGNATION**	**DESCRIPTION**
1 (blue)	**Negative**	HV Negative	**1 (red)**	**Positive**	HV Positive
2-5	**N/C**		**2-5**	**N/C**	
6 (red)	**Positive**	HV Positive	**6 (blue)**	**Negative**	HV Negative

Safety

Warning! This equipment produces high voltages that can be very dangerous. Don't be careless around this equipment.

- To provide safety the QBD-series Pockels cell driver module is designed to be powered with supply voltage +24VDC, which must be galvanically separated from mains.
- It is the user's responsibility to ensure that personnel are prevented from accidentally contacting the QBD-series Pockels cell driver module, especially the high voltage connector and cable. **Casual contact could be fatal.** Output cables must have good isolation for output voltage and low capacitance.
- After shut down, do not touch the load until it has been discharged. Use an appropriate measurement device to check for complete discharge.
- Disconnect the QBD-series Pockels cell driver module from DC power supply before changing electrical or mechanical connections.

Operations (Manual control)

1. Connect *+24VDC* power supply, pulse generator and Pockels cell
2. Set up *"HV PROGRAM" JUMPER*
3. Turn on *+24VDC* power supply
4. Set up *"ENABLE" JUMPER*
5. Use *"HV PROGRAM" TRIMPOT* to set up required output voltage
6. Send driving pulses from pulse generator to *PIN1* of *INTERFACE*
7. To power down the driver, turn off *+24VDC* power supply or remove *"ENABLE" JUMPER*

Operations (Automatic control)

1. Connect *+24V*, *INTERFACE* and *HV OUTPUT* connectors to the board.
2. Remove *"HV PROGRAM" JUMPER,* remove *"ENABLE" JUMPER*
3. *DISABLE* the high voltage output
4. Apply *+24VDC* to the Pockels cell driver
5. Set up the desired output voltage by applying the corresponding DC voltage to *PIN6* of *INTERFACE (HV PROGRAM)*
6. *ENABLE* high voltage output
7. Send driving pulses to *PIN1* of *INTERFACE*
8. To power down the driver, remove *+24VDC* power or *DISABLE* high voltage output